

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 Claim 1 (Currently amended): A method of
2 manufacturing a cylinder head for a small engine
3 comprising the steps of
4 casting a cylinder head having an as-cast cylinder
5 chamber defined by a cylinder wall, an as-cast spark plug
6 aperture communicating with one end of said cylinder
7 chamber, cooling fins, an exhaust port extending from the
8 cylinder chamber to a first face on an exhaust post
9 flange, an intake port extending from said cylinder
10 chamber to a second face on an intake port flange,
11 fastener openings in said first and second faces, a foot
12 flange having an as-cast mounting surface at another end
13 of said cylinder chamber, and having as-cast fastening
14 ~~apertures~~ openings in said foot flange, wherein said as-
15 cast spark-plug aperture is closed at one end by a thin
16 web;
17 machining said cylinder wall to a predetermined
18 tolerance;
19 removing said thin web that closes one end of said
20 as-cast spark-plug aperture; and
21 tapping said spark plug aperture.

Claim 2 (Canceled)

1 Claim 3 (Currently amended): A method of
2 manufacturing a cylinder head ~~according to claim 1, for a~~
3 small engine comprising the steps of
4 casting a cylinder head having an as-cast cylinder
5 chamber defined by a cylinder wall, an as-cast spark plug
6 aperture communicating with one end of said cylinder
7 chamber, cooling fins, an exhaust port extending from the
8 cylinder chamber to a first face on an exhaust port
9 flange, an intake port extending from said cylinder
10 chamber to a second face on an intake port flange,
11 fastener openings in said first and second faces, a foot
12 flange having an as-cast mounting surface at another end
13 of said cylinder chamber, and having as-cast fastening
14 openings in said foot flange, wherein said exhaust port
15 aperture and said intake aperture are closed by thin webs
16 forming portions of said as-cast cylinder chambers;
17 machining said cylinder wall to a predetermined
18 tolerance;
19 ~~and wherein said thin webs are removed removing said~~
20 thin webs when said cylinder wall is machined; and
21 tapping said spark plug aperture.

1 Claim 4 (Original): A method of manufacturing a

2 cylinder head according to claim 1, wherein the flatness
3 of the as-cast mounting surface of said foot flange is
4 0.006 inch over its entire surface.

1 Claim 5 (Original): A method of manufacturing a
2 cylinder head according to claim 1, wherein said as-cast
3 fastening openings in said foot flange are cast to a
4 perpendicularity of 0.002 inch with respect to the foot
5 flange mounting surface.

1 Claim 6 (Original): A method of manufacturing a
2 cylinder head according to claim 1, wherein said as-cast
3 fastening openings in said foot flange are cast to within
4 0.006 inch of a true positional location on said foot
5 flange.

1 Claim 7 (Currently amended): A method of
2 manufacturing a cylinder head for a small engine
3 comprising the steps of
4 casting a cylinder head having an as-cast cylinder
5 chamber defined by a cylinder wall, an as-cast spark plug
6 aperture communicating with one end of said cylinder
7 chamber, cooling fins, an exhaust port extending from the
8 cylinder chamber to a first face on an exhaust post
9 flange, an intake port extending from said cylinder

10 chamber to a second face on an intake port flange,
11 fastener openings in said first and second faces, a foot
12 flange having an as-cast mounting surface at another end
13 of said cylinder chamber, and having as-cast fastening
14 openings in said foot flange, said as-cast fastening
15 openings in said foot flange being cast within 0.006 inch
16 of a true positional location on said foot flange and
17 being cast to a perpendicularity of 0.002 inch with
18 respect to the foot flange mounting surface, said as-cast
19 mounting surface of said foot flange being 0.006 inch
20 over its entire surface, wherein said as-cast spark-plug
21 aperture is closed at one end by a thin web;
22 boring said cylinder wall to a predetermined
23 tolerance;
24 removing said thin web that closes one end of said
25 as-cast spark-plug aperture; and
26 tapping said spark plug aperture.

Claim 8 (Canceled)

1 Claim 9 (Currently amended): A method of
2 manufacturing a cylinder head ~~according to claim 7,~~ for a
3 small engine comprising the steps of
4 casting a cylinder head having an as-cast cylinder
5 chamber defined by a cylinder wall, an as-cast spark plug

6 aperture communicating with one end of said cylinder
7 chamber, cooling fins, an exhaust port extending from the
8 cylinder chamber to a first face on an exhaust port
9 flange, an intake port extending from said cylinder
10 chamber to a second face on an intake port flange,
11 fastener openings in said first and second faces, a foot
12 flange having an as-cast mounting surface at another end
13 of said cylinder chamber, and having as-cast fastening
14 openings in said foot flange, said as-cast fastening
15 openings in said foot flange being cast within 0.006 inch
16 of a true positional location on said foot flange and
17 being cast to a perpendicularity of 0.002 inch with
18 respect to the foot flange mounting surface, said as-cast
19 mounting surface of said foot flange being 0.006 inch
20 over its entire surface; wherein said exhaust port
21 aperture and said intake aperture are closed by thin webs
22 forming portions of said as-cast cylinder chambers;
23 boring said cylinder wall to a predetermined
24 tolerance;
25 ~~and wherein said thin webs are removed removing said~~
26 ~~thin webs~~ when said cylinder wall is machined; and
27 tapping said spark plug aperture.

1 Claim 10 (Original): A method of manufacturing a
2 cylinder head according to claim 1, wherein apertures are

3 cast in said fins, said apertures being axially aligned
4 with the fastening apertures in said foot flange.

1 Claim 11 (Original): A method of manufacturing a
2 cylinder head according to claim 1, wherein apertures are
3 machined in said fins, said apertures being axially
4 aligned with the fastening apertures in said foot flange.

Claims 12-16 (Canceled)

1 Claim 17 (Withdrawn): A method of manufacturing a
2 crankcase for a small engine comprising the steps of
3 casting a crankcase having a crankcase chamber, first and
4 second bearing recess at an end of said crankcase
5 chamber, each recess being defined by a cylindrical
6 sidewall having a plurality of rounded radially inwardly
7 directed flutes formed thereon, and pressing a roller
8 bearing into each recess.

1 Claim 18 (Withdrawn): A method of manufacturing a
2 crankcase according to claim 17, wherein the flutes are
3 evenly spaced about the cylindrical sidewalls and are
4 separated by arcuate sidewall portions.

1 Claim 19 (Withdrawn): A method of manufacturing a

2 crankcase according to claim 18, wherein the flutes in
3 said first bearing recess are offset an arcuate distance
4 with respect to the flutes in said second bearing recess.

1 Claim 20 (Withdrawn): A method of manufacturing a
2 crankcase according to claim 19, wherein said arcuate
3 distance corresponds to said arcuate dimension.

1 Claim 21 (Withdrawn): A method of manufacturing a
2 crankcase according to claim 20, wherein the number of
3 balls in said ball bearing do not equal the number of
4 flutes in a bearing recess.

1 Claim 22 (Withdrawn): A method of manufacturing a
2 crankcase according to claim 20, wherein the number of
3 balls in said ball bearing are greater than the number of
4 flutes in a bearing recess.

1 Claim 23 (Withdrawn): A method of manufacturing a
2 crankcase according to claim 20, wherein there are eight
3 balls in a ball bearing and seven flutes in a bearing
4 recess.

1 Claim 24 (Withdrawn): A method of manufacturing a
2 crankcase according to claim 17, wherein each roller

3 bearing is pressed into each recess until it seats on
4 said toroidal base.

1 Claim 25 (Currently amended): A method of
2 manufacturing a cylinder head for a small engine
3 comprising the steps of

4 casting a cylinder head having an as-cast cylinder
5 chamber defined by a cylinder wall, an as-cast spark plug
6 aperture communicating with one end of said cylinder
7 chamber, cooling fins, an exhaust port extending from the
8 cylinder chamber to a first face on an exhaust post
9 flange, an intake port extending from said cylinder
10 chamber to a second face on an intake port flange,
11 fastener openings in said first and second faces, a foot
12 flange having an as-cast mounting surface at another end
13 of said cylinder chamber, and having as-cast fastening
14 apertures openings in said foot flange, wherein said as-
15 cast spark-plug aperture is closed at one end by a thin
16 web;

17 machining said cylinder wall to a predetermined
18 tolerance;

19 removing said thin web that closes one end of said
20 as-cast spark-plug aperture;

21 tapping said spark plug aperture;

22 casting a crankcase having a crank chamber, a

23 crankcase connecting flange defining an opening to said
24 crank chamber, said crankcase connecting flange having an
25 as-cast flange mounting surface, and having first and
26 second fastener openings cast into said as-cast flange
27 mounting surface;

28 positioning the as-cast mounting surface of said
29 cylinder head foot flange in face-to-face contact with
30 the as-cast flange mounting surface of said crankcase so
31 that the as-cast fastening ~~apertures~~ openings in the
32 cylinder head foot flange are in axial alignment with the
33 first and second fastener openings of said crankcase
34 flange mounting surface; and

35 fastening said cylinder head to said crankcase by
36 threading said openings and apertures with self-threading
37 fasteners.

Claim 26 (Canceled)

1 Claim 27 (Currently amended): A method of
2 manufacturing a cylinder head ~~according to claim 25, for~~
3 a small engine comprising the steps of
4 casting a cylinder head having an as-cast cylinder
5 chamber defined by a cylinder wall, an as-cast spark plug
6 aperture communicating with one end of said cylinder
7 chamber, cooling fins, an exhaust port extending from the

8 cylinder chamber to a first face on an exhaust post
9 flange, an intake port extending from said cylinder
10 chamber to a second face on an intake port flange,
11 fastener openings in said first and second faces, a foot
12 flange having an as-cast mounting surface at another end
13 of said cylinder chamber, and having as-cast fastening
14 openings in said foot flange, wherein said exhaust port
15 aperture and said intake aperture are closed by thin webs
16 forming portions of said as-cast cylinder chambers;
17 machining said cylinder wall to a predetermined
18 tolerance;

19 ~~and wherein said thin webs are removed removing said~~
20 ~~thin webs~~ when said cylinder wall is machined;

21 tapping said spark plug aperture;

22 casting a crankcase having a crank chamber, a
23 crankcase connecting flange defining an opening to said
24 crank chamber, said crankcase connecting flange having an
25 as-cast flange mounting surface, and having first and
26 second fastener openings cast into said as-cast flange
27 mounting surface;

28 positioning the as-cast mounting surface of said
29 cylinder head foot flange in face-to-face contact with
30 the as-cast flange mounting surface of said crankcase so
31 that the as-cast fastening openings in the cylinder head
32 foot flange are in axial alignment with the first and

33 second fastener openings of said crankcase flange
34 mounting surface; and
35 fastening said cylinder head to said crankcase by
36 threading said openings and apertures with self-threading
37 fasteners.

38 Claim 28 (Original): A method of manufacturing a
39 cylinder head according to claim 25, wherein the flatness
40 of the as-cast mounting surface of said foot flange is
41 0.006 inch over its entire surface.

1 Claim 29 (Original): A method of manufacturing a
2 cylinder head according to claim 25, wherein said as-cast
3 fastening openings in said foot flange are cast to a
4 perpendicularity of 0.002 inch with respect to the foot
5 flange mounting surface.

1 Claim 30 (Original): A method of manufacturing a
2 cylinder head according to claim 25, wherein said as-cast
3 fastening openings in said foot flange are cast to within
4 0.006 inch of a true positional location on said foot
5 flange.

1 Claim 31 (Original): A method of manufacturing a
2 cylinder head according to claim 25, wherein apertures

3 are cast in said fins, said apertures being axially
4 aligned with the fastening apertures in said foot flange.

1 Claim 32 (Original): A method of manufacturing a
2 cylinder head according to claim 25, wherein apertures
3 are machined in said fins, said apertures being axially
4 aligned with the fastening apertures in said foot flange.

1 Claim 33 (Original): A method of manufacturing a
2 crankcase according to claim 25, wherein the flatness of
3 the as-cast flange mounting surface is 0.006 inch over
4 its entire surface.

5 Claim 34 (Original): A method of manufacturing a
6 crankcase according to claim 25, wherein said first and
7 second fastener openings are cast into said surface to a
8 perpendicularity of 0.002 inch with respect to said
9 surface.

1 Claim 35 (Original): A method of manufacturing a
2 crankcase according to claim 25, wherein first and second
3 fastener openings are cast to within 0.006 inch of a true
4 positional location on said surface.

1 Claim 36 (Original): A method of manufacturing a

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2 crankcase according to claim 25, wherein an O-ring groove
3 is cast into said surface to surround said opening, and
4 wherein an O-ring is inserted into said groove.